

Workout Description

Observe a child, an adult, and a college student using a cell phone to complete the same task. Describe the task, similarities of how the task was carried out by each user, and the differences in how the task was carried out by each user. Then discuss at least one implication of what you observed for the design of future cell phones (or apps if they were using an app to complete the cell phone task).

Task Description

Let's pretend a person lost his or her cell phone and somehow you find it and pick it up. Your task is to use this person's cell phone to find the way to contact him or her and let the person know that you have his or her phone now.

Method

I recruited three participants that included a college student, an adult and a child. First I asked for recorded their demographic information and cell phone using experience. To get this information, I interviewed participants through asking questions in a semi-structured questionnaire (Table 1). I hoped the answers to these questions could help to understand their behavior better when they were carrying out the task. Second, I introduced them the task they need to accomplish. After they notified me that they completely understood the task, I gave them a cell phone and asked them to "think aloud". I kept silence when they were doing the task and just observed and recorded their behavior until they accomplished the task.

Table 1.

Semi-structured questionnaire

Demographic information	
1. Age	() years old
2. Gender	Female () Male ()
3. Education level	Elementary school () Middle school () Undergraduate school () Graduate school ()
Cell phone using experience	
1. How long have you used cell phone since you got your first cell phone?	() year(s)
2. What is your cell phone now?	()
3. Before the cell phone you have now, how many cell phones did you have and what were they?	()

Apparatus

I used my cell phone, a Nokia E72, smart phone with Symbian operating system, in this task analysis. I asked all participants to assume that it was the lost cell phone and they can do anything with the cell phone in order to accomplish the task.



Participants

Although the default language of the operating system of my cell phone is English, some contents in it, such as some short messages, names in contacts list, and notes, are in Chinese. Because I have family and friends who speak different languages, some of them speak English and some of them speak Chinese Mandarin. People who speak English sent messages to me in English and I replied them in English. Their names in my contacts list were in English. Similarly, I sent messages to people who speak Chinese in Chinese and their names in my contacts list are also in Chinese. I wrote notes in my cell phone in both Chinese and English. The participants I chose in this study are all native Chinese Mandarin speakers who can speak, read and write English fluently. I observed that they could understand both the Chinese and English contents in my cell phone.

Table 2.

Participants' Demographic information

Participant #	Age	Gender	Education level
1	21	Female	Undergraduate
2	38	Male	Graduate
3	11	Female	Elementary

Table 3.

Participants' cell phone using experience

Participant #	Cell phone using years	Current cell phone	Previous cell phone
1	5	iPhone	Nokia regular phone, HTC smart phone
2	12	Samsung smart phone	Nokia regular phone, Sony Ericsson regular phone, Samsung regular phone.
3	0	NA	NA

Result


All three participants accomplished the task successfully. All of them used the cell phone found their own ways to contact the person who lost the cell phone. I presented the task analysis data from each of the participants below.

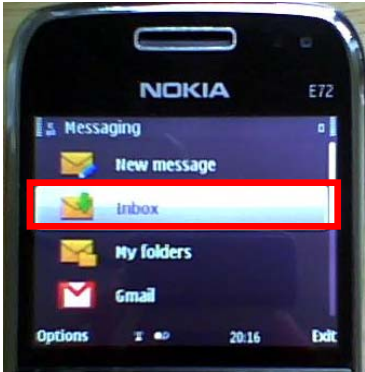
Participant 1 (The 21 years old college student)

Participant 1's strategy was first to check short messages list in the cell phone. Second, she tried to figure out who was this cell phone owner's close friend or family. At last, she called one person in short messages list to help her to contact with the owner. My results in Table 4 presented more details about how participant 1 accomplished the task.

Table 4.

Participant 1's task details

Step	Participant statement	Participant Action	System Response
1	I am going to check the short message first.	She tapped the messaging icon at the top left of main screen 	The cell phone displayed new message, Inbox, and my folders icons.



2	NA	<p>She tapped the inbox icon on the screen directly.</p> 	<p>The cell phone displayed the list of short message the owner of this cell phone received</p> <p>The list included the information of the name of sender, the date of the message and the first words of message</p>
3	Let me see...	She scanned the list from top of the screen and pressed the navigation button to roll down the list.	The cell phone displayed more messages on the list.
4	I found a person sent more messages to the owner than others. This person's name shows many times on the list. And several first words in this person's messages were "dear" or "baby". This person must be the owner's boyfriend or girlfriend or spouse. I am going to call this person.	She pressed one message sent by this person.	The cell phone displayed details of the message.
5	NA	She pressed the name of the message at the top of the screen.	The cell phone displayed a menu: reply, delete or call.
6	NA	She pressed the call button on the menu.	The cell phone started the call.
7	The person answered the call. The participant told this person that the owner of this cell phone lost his or her phone and she got it. Then the participant and the person both agreed with that the person gave the owner's email to the participant and the participant can contact with the owner directly.		
8	Ok, I now know how to contact with the owner.	She ended the call and returned the cell phone to the researcher.	NA


Participant 2 (The 38 years old adult)

Participant 2's strategy was first to check the contacts list in the cell phone and choose one to call and then ask whether that person can help to contact the owner of the cell phone. Table 5 contains more details about how participant 2 accomplished the task.

Table 5.

Participant 2's task details

Step	Participant statement	Participant Action	System Response
1	Where is the contacts list in this cell phone?	He tapped the menu icon at the bottom of main screen. 	The cell phone displayed calendar, contacts, log, internet, messaging, media, office icons.
2	Here the contacts button is.	He tapped the contacts icon on the screen. 	The cell phone displayed the list of contacts.
3	I am going to call....	He pressed the navigation button and trying to choose someone.	The cell phone displayed more contacts on the list.
4	I want to call aunt XX.	He found someone's name is not only the name but also a title, like aunt, uncle, cousin and so on. He pressed the name of aunt XX.	The cell phone displayed the cell phone number of aunt XX.
5	NA	He pressed the call button.	The cell phone started the call.

6	The call is not answered. I think I have to choose another one.	He returned to the list of contacts and pressed the navigation button again.	The cell phone displayed more contacts on the list.
7	I will try whether the contacts list has "Mother" or "Father" in the contacts.	He imputed "mother" in the type to search blank. 	The cell phone displayed the contact "Mother".
8	This time, "Mother" answered the call. The participant told her that the owner of this cell phone, looked like your son or daughter, lost his or her phone and he wanted to return the cell phone. Then the participant and the owner's mother both agreed with that the participant gave his cell phone number to the owner's mother. When next time the owner contact her mother (the owner's mother said her daughter usually contact her once every two day), her mother will tell the owner the participant's cell phone and contact him.		
9	Great, I'm done. All I need to do is wait the owner's call.	He ended the call and returned the cell phone to the researcher.	NA




Participant 3 (The 11 years old child)

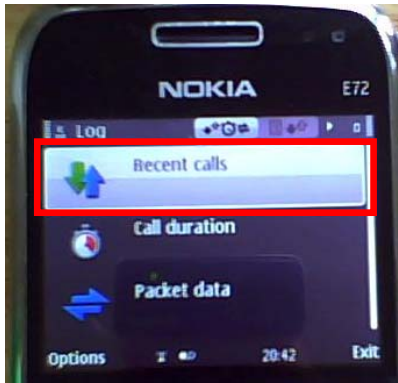
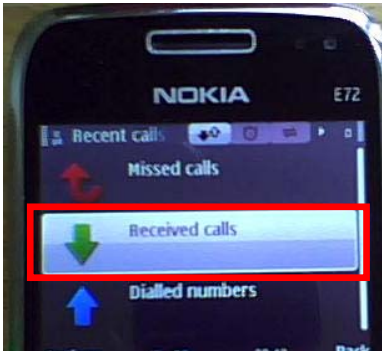
Participant 3's strategy was to find the cell phone number the owner dialed recently and call them to ask whether that person can help to contact the owner of the cell phone. My results in Table 6 presented more details about how participant 3 accomplished the task. Because participant 3 had little experience in using cell phones, she had to ask her mother for help for how to use some functions of the cell phone. Her mom did not interfere; for example sshe did not give participant 3 any advice how to accomplish the task or guide her to do something in order to accomplish the task.

Table 6.

Participant 3's task details

Step	Participant statement	Participant Action	System Response
1	I want to look at the dialed phone	She looked at the main screen for a while and tried to press each icon	The cell phone displayed content in

	numbers in this cell phone.	at the top of main screen to figure out what were they and whether there were dialed numbers. But she failed and exited every time.	every icon she pressed.
			
2	NA	Then she pressed the menu icon at the bottom of main screen. But she had no idea for the next step.	The cell phone displayed calendar, contacts, log, internet, messaging, media, and office icons.
			
3	Mom, could you please help me to find the dialed phone numbers?	She gave the phone to her mom and let her mom help to find the dialed phone numbers. And she sat beside her mom to watch.	
4	NA	Her mom pressed the log icons.	The cell phone displayed recent calls, call duration and packet data icons.
			
5	Look, here are recent calls.	She asked her mom return the cell phone to her.	NA

6	I know what to do next now.	She pressed the recent calls icon. 	The cell phone displayed missed calls, received calls and dialed numbers icons.
7	Look, mom, here is the dialed numbers.	She pressed the dialed numbers icons. 	<p>The cell phone displayed the dialed number list.</p> <p>The list provided the information of the name and time of the dialed number.</p>
8	I am going to call this person.	She chose the least phone number the owner dialed and pressed the number and call.	The cell phone started the call.
9	This person answered the call. The participant told that person that the owner of this cell phone lost his or her phone. She asked if the person on the phone could help her to find the owner. However, the participant could not express clearly how she wanted contact with the owner, so she gave the cell phone to her mother again. Her mother then agreed with the person that the person gave them the owner's email address and the participant and her mom can contact the owner by sending a email to the owner.		
10	NA	Her mom ended the call and returned the cell phone to the researcher.	NA

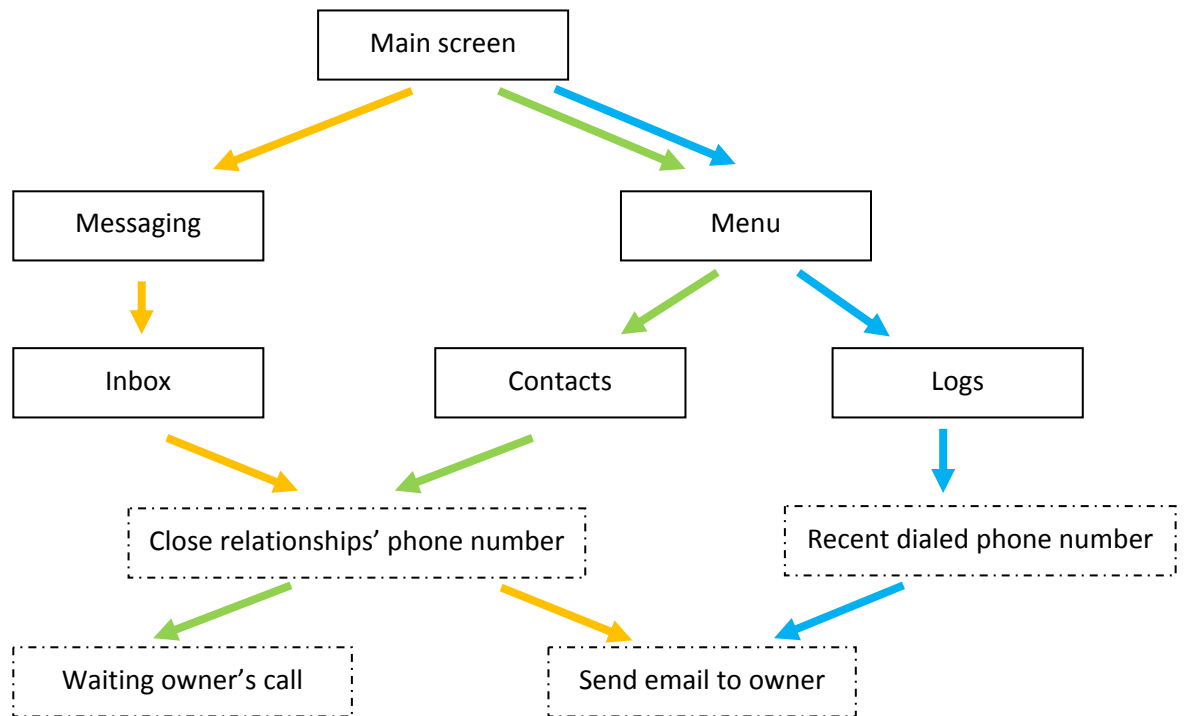
Observation

After I carefully observed how each participant carried out the task, I summarized their strategies in the Table 7 below. Different colors represent different participants. Yellow is participant 1, green is participant 2 and blue is participant 3. The boxes with solid line represent functions of cell phone. The boxes with broken line represent participants'

decisions of how to contact the owner of the cell phone. I found several interesting similarities and differences of participants' behavior.

Table 7.

Participants' strategies



Similarities

1. The most interesting similarity I found was that both participant 1 and 2 chose to contact someone who had close personal relationships with the owner of the cell phone. For example, participant 1 found the boyfriend and participant 2 called the mother respectively.
2. All participants started the task with pressing the icons on the main screen: messaging and menu rather than any shortcuts. For example, participant 1 pressed messaging, and participant 2 and 3 pressed menu.
3. When participants decided who they want to contact, all of them chose to call them rather than texting messages
4. Both participant 1 and 3 got the cell phone owner's email from the person they chose to contact with, and planned to send an email to the owner.

Differences

1. Three participants chose three different strategies to filter the person they want to contact to find the owner of the cell phone: messaging, contacts and logs.

2. Participant 1 got more of owner's personal information than the other two participants did.
3. Participant 1 and 2 carried out the task individually, but participant 3 carried out the task with her mom's help.

Implication

As I mentioned in the similarities, both participant 2 and 3 chose to contact someone who has close relationship with the owner. From this point, I argue that the users might think that cell phones are more frequently used between people who have close relationships than those who do not. So someone who has close relationship with the owner of the cell phone is more likely to know owner's more personal information and provide reliable information to help participants to find the owner. I wonder if there is also a possibility that people who have close relationships prefer choosing a cell phone to contact with each other. For example, is the same true of email and social network sites? Although I could not get the answer for this question from this task analysis, this task analysis did inspire me to think about interpersonal relationships and cell phone. According to my observation and common sense on people who use cell phone, it is impossible that they do not have their parents, girlfriend or boyfriend, spouse and close friends' names and phone numbers in the contacts in their cell phone. Therefore, I content that close relationships contacts should be the most important and necessary part of n contacts in cell phones.

However, in most cell phones people use today, the contacts design does not allow users to mark different interpersonal relationships. Although some cell phones allow users to group their contacts, the function of group is just like to simply add folders. Users just put different contacts in different folders. When they want to use the contacts groups, they have to get into the contacts groups screen first, second choose a specific group, and third choose the specific contact in that group. Three steps are too much! I do not think this design significantly help people can find their contacts better. And the difficult degrees of finding the names and cell phone numbers between close relationships and distant relationships from contacts are still the same. However, I observed that users round me in my daily life do contact with their close relationships more often. So in the future design, I contend that if cell phones should allow users to mark or categorize the contacts easily and give priority to close relationship contacts when users want to find them in contacts list.

Let us imagine that if cell phone do have this design and people are all familiar with this design, participant 1 and 2 in this task analysis do not need to check the messaging or title of the contact name to infer whether this person is close to the owner. They can just open the close relationships contacts list and find the person they want to contact directly. Of course, this design is not only for the convenience of people who pick up someone's lost cell phones and want to find the owner as soon as possible, but also for the convenience of people who think that their contacts list in cell phone is mess and finding close relationship contact is as difficult as finding any other contact in their cell phone contact list.

Furthermore, I think that design for different interpersonal relationships is important not only in contacts design of mobile phones, but also in HCI field. We interact with different interpersonal relationships differently in our daily life. Take myself as an example; my communication styles are very different when I talk with my advisor, my colleges, my close friends, and my family. When I talk to my advisor and colleges, I show more respect and behave modest and polite. When I talk to my close friends, we usually joke with each other, share our secrets and private stuff. When I talk to my family, I am relaxed, and the contents we talk are more focus on family issues and family numbers. Therefore, I can observe the differences among different relationships are everywhere in our daily life. So in my opinion, if HCI design wants to serve people's life better, designers should consider the possible interpersonal relationships for their potential users carefully. For example they should ask question that is that possible users use the design among different relationships or only one specific relationship? Is that possible that users use the design in different ways when they interact with different relationships? And other questions like these. I believe the answers to these questions can help designers know much better about their potential users.